



SIMTEK5685

PATENT

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE  
BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

In re application of: Tatsuya Anma  
Hideaki Takahashi

App. No.: 09/742751

Filed: December 20, 2000

Title: SINGLE-PHASE  
MULTIPOLAR MAGNET  
TYPE GENERATOR FOR  
VEHICLES

I hereby certify that this correspondence and all marked  
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Commissioner for Patents, Washington, D.C. 20231 on:

December 2, 2002

Date

Ernest A. Beutler, Reg. No. 19901

Art Unit: 2834

Conf. No: 6449

**TRANSMITTAL OF APPEAL BRIEF AND ACCOMPANYING AMENDMENT**

Assistant Commissioner for Patents  
Washington, D.C. 20231

Sir:

Enclosed herewith is one (1) original and two (2) copies of Appellants' Appeal Brief and accompanying amendment. Our check in the amount of \$320.00 to cover the associated fee is also enclosed.

If, for some reason, Appellant(s) has/have not paid the sufficient fee, please charge our Deposit Account No. 50-1164 for any such fee or credit our account for any overpayment. A duplicate copy of this letter is enclosed for such purposes.

Respectfully submitted,

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Appeal Brief Transmittal



SIMTEK5685

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Appellants: Tatsuya Anma  
Hideaki Takahashi  
App. No.: 09/742751  
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TYPE GENERATOR FOR VEHICLES  
Art Unit: 2834  
Conf. No: 6449

#10  
Appeal Brief  
Y Robinson  
12/13/02

**APPEAL BRIEF**

Assistant Commissioner for Patents

Washington, D.C. 20231

Sir:

**RELATES APPEALS AND INTERFERENCES**

There is a related appeal in Serial No. 09/788338, in that certain dependant claims in that application contain limitations that are the same as those before the Board in this appeal. The rejection of these features is on different reference of the same inventor as applied in this case. It is believed that these appeals should be heard together and both references are discussed in this brief and the brief filed in the other case. Aside, from this there are no other appeals or interferences which would have a bearing on or which would be affected by the outcome of this appeal.

**REAL PARTY IN INTEREST**

In addition to the Appellants, the real part in interest is their assignee, Kabushiki Kaisha MORIC.

F5685 Appeal Brief

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### **STATUS OF CLAIMS**

Claims 1, 3 and 4 are the sole remaining claims in this case and are on appeal before the Board. No amendment was filed subsequent to the Final Office Action, but an amendment is being filed concurrently herewith to correct a typographical error noted in Claim 1 by the Examiner. It is assumed that this amendment will be entered because it does overcome the rejection under 35 U.S.C. 112 and clarifies the claim language.

### **STATUS OF AMENDMENTS**

The only amendment filed subsequent to the Final Rejection is that that accompanies this brief as noted in the preceding paragraph. The clean copy of the claims in the Appendix assumes the entry of this amendment.

### **APPELLANTS' INVENTION**

Appellants' invention relates to a rotating electrical machine of the type which has relatively rotating alternate poles of permanent magnets that cooperate with pole teeth around which coils are wound. If the machine is a generator, it is driven and the rotation causes the generation of an electrical current in the coils. If the machine is an electrical motor, an alternating current is applied to the coils and this affects the relative rotation.

With this type of equipment, as the relative rotation occurs, either a coil winding is subjected to electrical current or an electrical current is generated in the coil winding. This current takes the form of a sine wave and it has been found that distortions caused by the relative rotation greatly affect the efficiency of the machine.

The Appellants have discovered that by appropriately selecting the angular relationship of the permanent magnets and their spacing and the number and spacing of the coils, the amount of disruptions can be significantly reduced and the efficiency of the machine improved. The angular extent of the magnet is in the range of 120° to 140° of the total relative rotation of 360° when a complete cycle of electrical current occurs in the winding. This angle is referred to as "the magnet electrical angle".

The invention is described in more detail in the specification which refers to the accompanying drawings and the detailed description appears beginning on page 3 of the specification under the appropriate paragraph and terminates at the end thereof.

### **ISSUES BEFORE THE BOARD**

The issues before the Board if where the subject matter of the rejected claims is indefinite under 35 U.S.C. 112, one of these objections having been addressed by the accompanying amendment.

Also before the Board is the question of whether Claim 1 is obvious on the combination of Miyao et al 4739203 in view of Kinoshita 6323572.

Also at issue is whether the subject matter of Claim 3 is obvious under 35 U.S.C. 103 on the combination applied against Claim 1 in further view of Tajima et al 4672253.

The Examiner has also rejected Claim 4 on the same combination as applied against Claim 3 and the issue before the Board to this claim is whether this claim language is made obvious by the combined references.

Also Appellant is placing before the Board whether Miyao 4737674, relied on by the Examiner in related Serial Number 09/742751 is more relevant and overcomes the defects of Miyao 4739203, cited by the Examiner in this case.

### **GROUPING OF THE CLAIMS**

None of the claims stand or fall together.

### **APPELLANTS' ARGUMENTS**

Turning first to the Examiner's rejection under 35 U.S.C. 112, the Examiner is correct in that Claim 1 in the second line thereof uses the word "alternating pluralities" when dealing with the permanent magnets when the correct word should have been "polarities", as clearly indicated in the specification and drawings and is well known in the art. This has been corrected by the accompanying amendment.

The Examiner has also objected to the claim language in calling for the relative rotation between the permanent magnets and the core teeth around which the coils are wound. This language as has been applied to provide generic language to cover the arrangement where either the magnets are fixed and the coils rotate or the magnets rotate and the coils are fixed. In either event, there is relative rotation between the two elements. Also, it would be possible to have both elements rotate, but in different directions relative to each other. These types of arrangements are well known in rotating electrical machines and the purpose of the claim language is to be generic to all of these variations as the invention is not dependent upon which

element or elements rotate and which if any are fixed against rotation. Therefore, it is believed that this rejection should be reversed.

Turning now to the art rejections, as noted above, Appellants invention relates to the provision of a rotating electrical machine wherein there are pluralities of circumferentially spaced permanent magnets of equal circumferential length. Rather than having the magnets disposed with no air gap between them, the magnets are disposed so that they subtend a relatively small arc related to the time in which a single wave of electrical current passes through the associated coil. This is done so as to improve the efficiency and the specification includes data including the improved deficiency.

The Miyao reference, the principal reference relied upon by the Examiner, not only does not have equally spaced permanent magnets of opposite polarities in that he uses magnetic poles of different lengths and furthermore fails to provide any air gaps between the magnets. Furthermore, this reference is directed primarily toward providing an electric machine that will be self starting and avoid other starting assist devices allegedly shown in the prior art. Thus, the reference deals with a completely different problem and provides a completely different structure than that called out in the claims and specifically in independent Claim 1.

Although the Examiner contends that this shows an electrical angle of  $120^\circ$ , it shows a nature physical angle of  $120^\circ$ , not the  $120^\circ$  to  $140^\circ$  range set out specifically in the claims as to the relationship during the time when a complete cycle of current flows through the coil. Hence, the reference clearly had no relevance to the claimed subject matter.

The Examiner attempts to cure the deficiencies of the Miyao reference by referring to Kinoshita. The Examiner alleges that Kinoshita "discloses for the purpose of improving the performance of motors and generators, a non-magnetized area 16 between the magnets". However, the gaps which the Examiner has referred to in this reference are the gaps 16 which are actually gaps in the individual magnets and not gaps between adjacent magnets. Thus, it is submitted that this reference adds nothing to the Miyao reference and in fact that this structure would not be used in Miyao because it would defeat Miyao's purpose of obtaining self starting without iron cores. Hence, it is submitted that this combination is nothing more than an attempt to build Appellants' construction from a prior art and devoid of any teaching of a combination that would result in the structure which the Examiner is proposing to produce.

In fact, if the Examiner would look, he would see that the magnets here are actually totally coextensive in that there are iron cores and the permanent magnets interposed between them so that there is a continuous magnetic field rather than voids between adjacent magnets of opposite polarity.

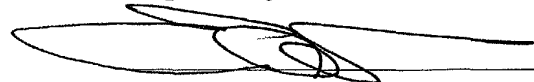
Miyao 4737674, relied on by the Examiner in related Serial Number 09/742751 has exactly the same defects as the reference applied here and the same arguments as to patentability apply here.

Claim 3 distinguishes over Claim 1 in calling for the machine to be specifically an electrical generator. Both Miyao references relate primarily to a brushless electric motors and because they are designed to provide self starting, do not have any relevance to a generator. Kinoshita, on the other hand, does disclose either a motor or a generator, but otherwise fails to disclose this invention. The Examiner proposes to modify the already strained combination in light of the teaching of Tajima et al which does show a device for reducing cogging but again has magnets that are in abutment with each other with no gaps between them and otherwise fails to anticipate the invention.

Claim 4 further distinguishes in calling for the permanent magnets to rotate and the coil windings to be fixed against rotation. Miyao and Kinoshita have exactly the opposite relationship but it is admitted that Tajima does have rotating magnets, but otherwise fails to anticipate the invention.

In view of the foregoing, it is most respectfully submitted that the Examiner's art and technical rejections are not well based and reversal of them is most courteously solicited.

Respectfully submitted,



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## APPENDIX

### Clean Copy of Claims on Appeal

1. A rotating machine having a plurality of permanent magnet having alternating polarity in a circumferential direction, each of said magnets having the same circumferential extent and said magnets being positioned at equal circumferential intervals with non-magnetized areas therebetween, a relatively rotatable associated element having a plurality of armatures around which coil windings are formed, the spacing of the poles of said permanent magnets and their number and the number and spacing of the coils being set so that if the degree of relative rotation during which each coil experiences a complete cycle of electrical current is taken as  $360^\circ$  the circumferential extent of each of the magnet poles (the magnet electrical angle) lies in the range of  $120^\circ$  to  $140^\circ$  of such relative rotation.

3. A rotating machine as set forth in claim 1 wherein the machine comprises an electrical generator.

4. A rotating machine as set forth in claim 3 wherein the permanent magnets rotate and the coil windings are fixed against rotation.